R E P O R T R E S U M E S

ED 012 170 JC 660 332

A COMPARISON OF TERMINAL WITH COLLEGE PARALLEL FEMALES AT GEORGIA SOUTHWESTERN COLLEGE.

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REPORT NUMBER USG-RB-4-66 PUB DATE 27 MAY 66
EDRS PRICE MF-$0.09 HC-$0.56 14P.

DESCRIPTORS- *JUNIOR COLLEGES, *PREDICTION, *STUDENT CHARACTERISTICS, *ADMISSION CRITERIA, ADMISSION (SCHOOL), TESTING, GRADE POINT AVERAGE, ACADEMIC PERFORMANCE, COLLEGE ENTRANCE EXAMINATIONS, *TRANSFER STUDENTS, TERMINAL EDUCATION, FEMALES, ATLANTA, AMERICUS, CEEB SCHOLASTIC APTITUDE TEST

DATA FOR 69 FEMALE TERMINAL-OCCUPATIONAL STUDENTS ENDING THEIR FRESHMAN YEARS IN 1963 AND 1964 ARE ANALYZED AND COMPARED WITH 81 REGULAR FEMALE STUDENTS DURING THE SAME PERIOD. PREDICTION OF FRESHMAN AVERAGE GRADE (PFAG) CAN BE MADE ON THE BASIS OF COLLEGE ENTRANCE EXAMINATION BOARD SCORES (SAT V AND SAT M) AND HIGH SCHOOL AVERAGE FOR REGULAR AND TERMINAL APPLICANTS WITH STANDARD ERRORS OF ESTIMATE OF .42 AND .43 AND MULTIPLE CORRELATIONS OF .73 AND .75, RESPECTIVELY. ANALYSIS OF COVARIANCE INDICATES THAT MALES, REGULAR FEMALES, AND TERMINAL FEMALES AT THE COLLEGE COULD BE COMBINED AND A SINGLE PREDICTION EQUATION USED FOR PFAG. A DERIVATIVE INTEGRAL EQUATION IS MORE EASILY COMPUTED AND ACCURATE WITHIN .2 GRADE POINTS OF THE PREDICTION EQUATION. A PROCEDURE FOR SETTING PFAG CUTOFF SCORES IS DEMONSTRATED, FOLLOWED BY A YIELD TABLE RESULTING FROM THE USE OF VARIOUS PFAG CUTTING SCORES FOR GEORGIA SOUTHWESTERN APPLICANTS. (AL)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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ED012170

Research Bulletin 4-66

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DEC 02 1966

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May 27, 1966

JC 660 332

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A Comparison of Terminal With College Parallel Females At Georgia Southwestern College

by

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In many of the junior colleges in the University System of Georgia courses of study are offered which are designed for students desiring immediate employment, usually without obtaining a college degree. These courses of study are known as terminal programs and are usually oriented toward certain types of business occupations such as accounting, clerical work, and secretarial science. Some nursing programs are also considered terminal as are often programs of a general education nature which, although lasting for two years, give a broad introduction to many specific fields but do not allow for concentration in any one area.

Georgia Southwestern College is one unit of the University System of Georgia which offers such terminal programs. According to the 1965-66 catalog, two-year programs are offered in clerical and secretarial science, accounting, and electronic data processing, and a three-year program is offered in nursing.

Data collected by the Office of Testing and Guidance seem to indicate a lack of interest in the terminal programs at Georgia Southwestern on the part of male students. Females, on the other hand, appear to be fairly well attracted to terminal courses, possibly due to the influence of secretarial programs. Each year since 1958, there have been less than 5 entering freshmen males enrolled in terminal programs at Georgia Southwestern, while female enrollment averaged about 35 each year. Nursing appears to be the most popular program, followed by secretarial science.[1]

The Data

Data for female End-of-Freshman-Year (EOFY) terminals (designated as such by the college) for the years 1963 and 1964 were analyzed and compared with regular EOFY females for the same years at Georgia Southwestern College. Tables 1 and 2 give the means, standard deviations, and intercorrelations for Freshman Average Grade (FAG), College Board Scores (SAT V and SAT M), and high school average (HSA), for the regular EOFY females at Georgia Southwestern for those years. Tables 3 and 4 present similar data for the EOFY terminal females.

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[1]Terminal males will not be considered in any of the following analyses

Table 1

Means, Standard Deviations, and Intercorrelations Among Various Predictors and FAG for Regular EOFY Females at Georgia Southwestern College, 1963

N= 30

Variable	Mean	S.D.	SAT V	SAT M	HSA
FAG	2.6	.7	.56	.52	.68
SAT V	421.8	105.5	x	68	.45
SAT M	417.4	67.5		x	.40
HSA	31.4	6.4			x

Table 2

Means, Standard Deviations, and Intercorrelations Among Various Predictors and FAG for Regular EOFY Females at Georgia Southwestern College, 1964

N= 51

Variable	Mean	S.D.	SAT V	SAT M	HSA
FAG	2.4	.6	.54	.40	.65
SAT V	399.5	75.5	x	.58	.37
SAT M	402.4	81.8		x	.39
HSA	29.2	6.4			x

Table 3

Means, Standard Deviations, and Intercorrelations Among Various Predictors and FAG for Terminal EOFY Females at Georgia Southwestern College, 1963

N= 32

Variable	Mean	S.D.	SAT V	SAT M	HSA
FAG	2.3	.6	.66	.53	.53
SAT V	376.8	76.0	x	.66	.36
SAT M	378.0	74.0		x	.32
HSA	28.1	5.3			x

Table 4

Means, Standard Deviations, and Intercorrelations Among Various Predictors and FAG for Terminal EOFY Females at Georgia Southwestern College, 1964

N= 37

Variable	Mean	S.D.	SAT V	SAT M	HSA
FAG	2.4	.6	.44	.65	.66
SAT V	379.5	69.2	x	.58	.65
SAT M	388.8	67.6		x	.58
HSA	28.3	6.8			x

Tables 5 and 6 show the preceding statistics for these two groups for the two years, 1963 and 1964 combined.

Table 5

Summary Statistics for Regular EOFY Females at Georgia Southwestern College, 1963 and 1964

N= 81

Variable	Mean	S.D.	SAT V	SAT M	HSA
FAG	2.5	.6	.56	.44	.67
SAT V	407.8	87.8	x	.60	.41
SAT M	407.9	76.7		x	.40
HSA	30.0	6.4			x

Table 6

Summary Statistics for Terminal EOFY Females at Georgia Southwestern College, 1963 and 1964

N= 69

Variable	Mean	S.D.	SAT V	SAT M	HSA
FAG	2.4	.6	.54	60	.61
SAT V	378.2	71.9	x	.62	.52
SAT M	383.8	70.4		x	.46
HSA	28.2	6.1			x

Scrutiny of Tables 1 through 4 reveals that during the years 1963 and 1964 mean scores of FAG, SAT V, SAT M, and HSA decreased for the regular EOFY female students while mean scores of these same variables for the EOFY terminal females slightly increased. These facts are sumarized in Table 7.

Table 7

Year	SAT V	SAT M	HSA	FAG	N
		Regular EOFY Females			
1963	421.8	417.4	31.4	2.63	30
1964	399.5	402.4	29.2	2.43	51
		Terminal EOFY Females			
1963	376.8	378.0	28.1	2.31	32
1964	379.5	388.8	28.3	2.41	37

Correlations between predicted FAG (PFAG) and obtained FAG are quite good for both groups. Again, the terminal group showed an increase in the correlation between PFAG and FAG while the PFAG-FAG correlation for the regular group declined slightly.

PFAG - FAG Correlations

Year	Regular EOFY Females	Terminal EOFY Females
1963	.73	.71
1964	.68	.72

Analysis of covariance[2] was used to compare the 1963-64 regular EOFY females with the 1963-64 terminal EOFY females. The analysis revealed no significant differences between the groups. Since another recent study for Georgia Southwestern indicated that males and females could be combined,an analysis of covariance was tried on just the 1964 EOFY males, EOFY females, and EOFY terminal females. Again, the results indicated no signifcant differences between the three groups. Thus, the same equation for predicting freshman average grades would be applicable for regular males, and for regular or terminal females at Georgia Southwestern. This equation is:

$$PFAG = +.0013\ V + .0015\ M + .0473\ H - .0891$$

[2]See Gulliksen, H.O., and Wilks, S.S. Regression tests for several samples. Psychometrika, 1950, 15, 91-114.

The standard error of estimate for this question is .46 and the multiple correlation is .67. All three regression weights are significantly different from zero. Table 8 gives distributions and percentiles for PFAG from this equation.

When the regression equations for predicting FAG for the two separate 1964 female groups are analyzed, it is interesting to notice that for regular EOFY females the weight for SAT M is not significantly different from zero while the weight for SAT V for the terminal EOFY females is not significantly different from zero. The individual equations are:

Regular: PFAG = +.0027 V -.0000 M* +.0485 H -.0540

Terminal: PFAG = -.0011 V* +.0039 M +.0446 H +.0426

* Indicates non-significant predictor weight ($p > .05$)

The standard errors of estimate are .42 and .43 and the multiple correlations are .73 and .75, respectively.

Twenty-two terminal females either dropped out before completing a year or did not take enough work during the year to be included in the EOFY group (1963 + 1964). Mean scores on SAT V, SAT M, and HSA for this group are much lower than those of the EOFY terminal group. The mean PFAG of the terminal drop-out group is 2.25 compared to 2.44 for the terminal EOFY group, and 2.44 for the regular drop-out group.

Prediction on the Basis of an Integral Equation

Since for 1964, the most recent year for which data are available, regular males, regular females, and terminal females could be combined, we recommend the use of one equation for predicting freshman average grades. This equation is:

PFAG = +.0013 SAT V +.0015 SAT M +.0473 HSA -.0891

This equation can be simplified and put in an integral form as

INDEX = 1 V + 1 M + 3 H

To use the integral equation, you must drop the last number of each SAT score, e.g., a V of 427 becomes 42. Use both digits of the HSA. The Index Number, used in conjunction with Table 9, will give a predicted average grade (PFAG) on a scale where A=4 and an associated probability of obtaining an A, B or better, or C or better average freshman grade.

An advantage of the Index Equation is ease of computation, but the PFAG based on the Index equivalent will not be quite as accurate as a PFAG based on the prediction equation. The two will probably be within .2 grade points of each other. The difference is due to the rounding of numbers which takes place in obtaining the integral equation and to treating all three groups by one procedure. The full equation should be used for making final decisions in any doubtful cases.

Table 8

Predicted Freshman Average Grade

Entering Freshmen, Georgia Southwestern
(PFAG from 1964 Combined Male, Regular Female, and Terminal Female Equation)

Predicted Average	Males		Reg. Females		Term. Females		Total	
	Number	%ile*	Number	%ile*	Number	%ile*	Number	%ile*
3.6	1	99					1	99
3.5		99	1	98			1	99
3.4	2	98		98			2	98
3.3	3	97		98			3	98
3.2	4	95		98			4	96
3.1	4	93	4	93	3	94	11	93
3.0	6	91	4	87	4	86	14	89
2.9	5	89	1	86	2	82	8	87
2.8	8	85	5	78	2	78	15	83
2.7	7	82	4	73	2	73	13	79
2.6	11	78	7	63	2	69	20	73
2.5	14	72	3	58	3	63	20	68
2.4	22	62	5	51	5	53	32	59
2.3	22	53	6	43	3	47	31	50
2.2	21	44	3	38	2	43	26	42
2.1	30	31	9	26	6	31	45	30
2.0	23	21	8	14	3	24	34	20
1.9	19	13	3	10	3	18	25	13
1.8	12	8	5	3	6	6	23	6
1.7	17		2		2	2	21	
1.6	2				1		3	
Entering Freshman Group Statistics								
Number	233		70		49		352	
Mean	2.28		2.38		2.33		2.31	
S.D.	.42		.42		.44		.42	
End of Freshman Year Group Statistics								
Number	197		51		37		285	
Mean	2.29		2.41		2.32		2.32	
S.D.	.41		.42		.46		.42	
Correlation with FAG from 1964 Equation	.65		.70 (All Females)				.67	

* Percentiles for all cases below each interval, not including the interval.

Table 9

Georgia Southwestern

Index Equation

For Males, Females, and Terminal Females:

INDEX = 1 V + 1 M + 3 H

Standard Error = 30 Index Units

	Grade	Index
A	4.0	260
B	3.0	194
C	2.0	127
D	1.0	60
F	0.0	0

INDEX	A=4 PFAG	Probability of: C (2.0) or Better	B (3.0) or Better	A (4.0)
280	4.3			.75
270	4.1			.63
260	4.0		.99	.50
250	3.8		.97	.37
240	3.7		.94	.25
230	3.5		.88	.16
220	3.4		.81	.09
210	3.2		.70	.05
200	3.1	.99	.58	.02
190	2.9	.98	.45	.01
180	2.8	.96	.32	
170	2.6	.92	.21	
160	2.5	.86	.13	
150	2.3	.78	.07	
140	2.2	.67	.04	
130	2.0	.54	.02	
120	1.9	.41	.01	
110	1.7	.29		
100	1.6	.19		
90	1.4	.11		
80	1.3	.06		
70	1.1	.03		
60	1.0	.01		
50	.8			

Cutting Scores

The distributions in Tables 10 (Males) and 11 (Females) can be used to set PFAG cutting scores for males and females to help the admissions officer in making decisions about applicants to Georgia Southwestern College. Table 12 is a worksheet outlining the steps to be followed in determining a cutting score. Application of this procedure can produce a table such as Table 13 which shows the expected yield of entering students from using various cutting PFAG's when 540 males and 360 females are expected to apply. A PFAG cutting score of 1.73 for males and 1.75 for females would produce the desired size of entering freshman class for 1966 as stated by the college (420 males and 280 females).

Table 10

Georgia Southwestern
Predicted Freshman Average Grades for Males
Fall, 1964

Predicted Average Grade	All Applicants		All Accepted		All Entering	
	Number	%ile	Number	%ile	Number	%ile
3.6	1	99	1	99	1	99
3.5	1	99	1	99		99
3.4	2	98	2	98	2	98
3.3	4	97	4	97	3	97
3.2	4	96	4	95	4	95
3.1	4	95	4	94	4	93
3.0	7	93	7	91	6	91
2.9	7	91	7	88	5	89
2.8	9	88	9	85	8	85
2.7	10	85	10	81	7	82
2.6	13	81	13	76	11	78
2.5	15	77	14	71	14	72
2.4	27	68	26	61	22	62
2.3	25	61	24	52	22	53
2.2	28	53	26	43	21	44
2.1	37	42	36	29	30	31
2.0	32	32	25	20	23	21
1.9	30	23	20	12	19	13
1.8	18	18	12	8	12	8
1.7	31	8	19	1	17	
1.6	15	4	3		2	
1.5	10	1				
1.4	3					
1.3	1					
1.2	1					
Number	335		267		233	
Means	2.18		2.29		2.28	
S.D.	.45		.42		.42	

Table 11

Georgia Southwestern
Predicted Freshman Average Grades for Females
Fall, 1964

Predicted Average Grade	All Applicants		All Accepted		All Entering	
	Number	%ile	Number	%ile	Number	%ile
3.5	1	99	1	99	1	99
3.4	1	98	1	98		99
3.3		98		98		99
3.2	2	97	2	97		99
3.1	8	93	8	91	7	93
3.0	9	89	9	85	8	86
2.9	5	86	5	81	3	84
2.8	8	82	8	76	7	78
2.7	11	76	10	69	6	73
2.6	11	70	10	62	9	65
2.5	9	66	9	56	6	60
2.4	13	59	12	47	10	52
2.3	10	54	10	40	9	44
2.2	15	46	9	34	5	40
2.1	22	35	15	24	15	27
2.0	19	25	12	15	11	18
1.9	12	19	7	11	6	13
1.8	21	8	11	3	11	4
1.7	7	4	4		4	
1.6	4	2	1		1	
1.5	4					
Number	193		144		119	
Means	2.28		2.40		2.36	
S.D.	.46		.44		.43	

Table 12

Tentative Worksheet for Computation of Cutting Scores

Georgia Southwestern, 1966 Freshmen

Line	For Males	For Females	
1	540	360	Enter the number of Anticipated Applications for the Fall Quarter of the coming year.
2	420	280	Enter the number of Desired Entering Freshman for the Fall Quarter of the coming year.
3	336	210	Enter the number of Accepted Applications for the Fall Quarter of the previous year. (These are estimates of 1965.)
4	294	174 includes Terminals	Enter the number of Entering Freshmen for the Fall Quarter of the previous year. (These are estimates of 1965.)
5	1.14	1.21	Compute the ratio of Accepted Applicants to Entering Freshmen by dividing Line 3 by Line 4.
6	479	339	Compute the number of Applications to Accept by multiplying Line 2 by Line 5.
7	89%	94%	Compute the per cent of Applications to Accept by dividing Line 6 by Line 1.
8	11%ile	6%ile	Find the percentile interval to which the cutting score will fall by subtracting Line 7 from 100%.
	1.73PFAG	1.75PFAG	Read down the column labeled All Applicants from the tables for all male applicants and for all female applicants until finding the %ile that is closest to the %ile on Line 8. The PFAG that corresponds to this %ile is the PFAG Cutting Score (for the respective sex group).

Yield Table

Table 13
PFAG Cutting Scores Which Will Allow for Various Sized Entering Classes in the Fall of 1966 at Georgia Southwestern
Based on the Expectance of 540 Male and 360 Female Applicants (Total= 900)

PFAG CUTTING SCORE	NUMBER OF ENTERING FRESHMEN		
	Males	Females	Total
1.5	468	298	766
1.6	454	292	746
1.7	435	286	721
1.8	387	274	661
1.9	364	242	606
2.0	321	224	545
2.1	274	194	468
2.2	222	161	383

Taken from distribution of 1964 applicants with PFAG computed from 1964 combined equation for males, regular females, and terminal females.

Summary

Over-all, it appears that even though the terminal females at Georgia Southwestern have lower mean scores on FAG, SAT, and HSA than do the regular entrants, their scores are rising while those of the regular group are declining. Freshman average grades can be predicted with accuracy in either group as evidenced by the high correlations between PFAG and FAG. The terminal females also appear to have a sufficient amount of academic aptitude when compared with the regular entering females and could probably succeed in the college parallel curricula as well as their regular counterparts.

Analysis of covariance indicated that the 1964 EOFY males, regular females, and terminal females at Georgia Southwestern could be combined and a single prediction equation used for predicting freshman grades. This equation is given with accompanying percentile distributions. An integral equation based on this prediction equation is also presented. A procedure for setting PFAG cutoff scores for Georgia Southwestern is demonstrated, followed by the yield table resulting from the use of various PFAG cutting scores for Georgia Southwestern applicants.